

the dark rifts, where the bright bands are broken up into very minute flocculent patches. The result of my examination is that I find nothing on the transparency that is not on the negative. I specially looked for any *edge* of greater brightness which might mark the limit which the reducing solution reached, but can find nothing of the kind. I can therefore only conclude that the process of local reduction has been so carefully carried out that no spurious detail has been produced in the negative from which this transparency was made.

Since the prolonged examination of small details renders one extremely liable to overlook larger and more general effects, I have repeatedly broken off my examination and resumed it on other occasions ; but the other results have always been the same. Mr. Hinks and I have also together compared the photographs, but we both came to the conclusion that whatever was in the transparency could be found in the untouched negatives.

New Double Stars detected with the 17 $\frac{1}{4}$ in. Reflector during the year 1903. By T. E. Espin, M.A.

The following stars have been found to be double during the year 1903. As they are so few, and the measures are for the most part incomplete, I have not numbered them.

B.D.		R.A. 1880	Decl.	P.	D.	Mags.
	h	m				
53°234	1	25	+ 53 59	215°7	5"1	8.6 11.8
63°1346	17	21.4	63 51	19°1	6.5	9.0 11.5
64°1256	18	15.6	64 1	332°7	8.6	8.2 12.0
51°2372		20.9	51 35	198°7	2.7	8.6 8.7
60°1844		42.4	60 32	103°6	4.3	9.1 11.1
61°1816	19	5.2	61 4	243°9	6.1	9.1 9.8
59°1979		12.7	59 33	116°3	7.4	9.0 11.6
59°1981		13.3	59 34	113°7	8.1	8.8 11.7
64°1346		20.2	64 18	216°3	4.4	8.8 9.9
64°1364		35.6	64 47	19°3	8.9	8.5 10.5
64°1369		37.8	64 39	313°7	2.7	8.8 9.4
64°1386		46.3	64 23	70°7	6.5	8.0 10.5
59°2160		57.3	59 25	145°0	4.1	9.0 11.5
52°2883	21	8.7	52 48	—	4 ±	9.0 12
63°1814	22	5.8	63 31	—	4 ±	9 11

The Rotation Period of Saturn in 1903. By W. F. Denning.

The extensive disturbance observed on Saturn in 1903 offered an excellent opportunity for determining the rotation period of the north-temperate region of the planet. No doubt, however, the rate of the spots merely represented that of an atmospheric current, not nearly conformable with the motion of the globe.

To ascertain the rotation period reliably and within small limits of error it is by no means necessary to depend upon the transit times of spots derived by micrometric measurement. The method of eye estimation may not be quite so exact, but, as in the case of *Jupiter's* markings, it is capable of furnishing excellent results. There are certainly more important factors affecting such investigations than the manner of taking transits. The question of *identification* is a serious one. The mis-identification of planetary features has proved a fruitful source of large errors, and is scarcely avoidable unless observations are obtained at short intervals and a fairly numerous list of transits accumulated.

Large irregular markings, light and dark, were pretty abundant in the northern hemisphere of *Saturn* during the past year, and these underwent certain variations in aspect. The form, size, and brilliancy of the luminous spots appeared notably inconstant, and there were changes in the rate of motion. Several of the objects alluded to were compound, consisting of two or three parts wholly or partly divided by dusky masses or wisps similarly to those sometimes seen crossing the bright equatorial region of *Jupiter*. To follow the same individual marks on *Saturn*, and safely single them out one from another after various intervals, formed the most critical and delicate work in the recent telescopic study of the planet. As a test of the correctness of my own identifications I have collected together all the observed transits of spots I could find by various observers, and the comparisons made have, I hope, been the means of eliminating serious mistakes. I here append the transit times from observations secured between June 23 and September 22 of Barnard's spot, and of two smaller spots following it marked B, C, and D respectively. The times are compared with an adopted, uncorrected rate of $10^h 38^m$ and the residuals given.

Observed Transit Times of Barnard's White Spot on Saturn and of two other White Spots following it. 1903, June 23–September 22.

Observer.	Date. 1903.	Transit G.M.T. h m	Computed Period $10^h 38^m$.		Residual O—C.	Spot.	Notes.
			h	m			
Barnard ...	June 23	21 42	21	42	± 0	B	b., e., o.
Barnard ...	24	18 58	18	58	± 0	B	b., e., o.
Hartwig ...	26	13 36	13	30	+ 6	B	
Messow and Mainka }	26	13 38	13	30	+ 8	B	